

## Unit 6 Parabolas Assignment Sheet (Honors)

Date	Day	Objectives	Assignments
Mon., 4/11	1	<ul style="list-style-type: none"> <li>graph parabolas with &amp; without a calculator</li> <li>discover properties of a parabola</li> <li>given a description, create an equation;</li> <li>given the equation, describe the parabola</li> <li>x- and y-intercepts</li> </ul>	Day 1 Homework WS
Tues., 4/12	2	<ul style="list-style-type: none"> <li>put an equation in standard quadratic form and identify the quadratic term, linear term, &amp; constant</li> <li>put an equation in standard parabola form using CTS</li> <li>put an equation in standard parabola form using formula: <math>h = \frac{-b}{2a}</math></li> </ul>	Day 2 Homework WS Quiz Review WS
Wed., 4/13 <i>Early Release</i>	3	<ul style="list-style-type: none"> <li><b>QUIZ</b></li> </ul>	
Thurs., 4/14	4	<ul style="list-style-type: none"> <li>graphing quadratic inequalities</li> <li>solve quadratic inequalities algebraically</li> <li>write the equation of the parabola:               <ol style="list-style-type: none"> <li>given the vertex &amp; 1 point</li> <li>given any 3 points</li> </ol> </li> </ul>	Day 4 Homework WS p. 251 # 14, 17, 20, 45 (leave in standard form) and p. 237 # 16, 18 (leave in quadratic form)
Fri., 4/15	5	<ul style="list-style-type: none"> <li>solve max/min word problems</li> </ul>	Day 5 Homework WS
Mon., 4/18	6	<ul style="list-style-type: none"> <li>Review</li> </ul>	STUDY!!!
Tues., 4/19	7	<ul style="list-style-type: none"> <li><b>TEST</b></li> <li>Other Parabolas</li> <li>Assign Wax Paper Conics Project</li> </ul>	

## Unit 6 Parabola Notes (parabolas that open up & down)

**Parabola:** the set of all points in a plane that are the same distance from a given line and a given point not on the line.

**Standard Form of an equation of a parabola is:**  $y - k = a(x - h)^2$

**Vertex:** (h,k)

**Maximum or minimum point:** find the vertex: (h, k) use formula  $h = \frac{-b}{2a}$

- parabola will have a maximum value if it opens down; "a" will be negative
- parabola will have a minimum value if it opens up; "a" will be positive

**Zeros of the function:** same as x-intercepts (where the function crosses the x-axis)

**Axis of symmetry:** a vertical line passing through the vertex (equation is:  $x = h$ )

**Direction of opening:**

If  $a > 0$  (a positive number), then the parabola opens up

If  $a < 0$  (a negative number), then the parabola opens down

**Width:**

If  $|a| = 1$ , then the parabola has "Normal" width (same width as  $y = x^2$ )

If  $|a| < 1$ , then the parabola is wide

If  $|a| > 1$ , then the parabola is narrow

**Intercepts:** where the parabola crosses either the x or y axis

- **x-intercepts:** ( ?, 0 ) replace "y" with zero & solve
- **y-intercepts:** ( 0, ? ) replace "x" with zero and solve  
if you get "i" when solving, then it has no intercepts of that type

**Standard Quadratic Form:**  $y = Ax^2 + Bx + C$

$Ax^2$  = the quadratic term

$Bx$  = the linear term

$C$  = the constant term

Equation in standard form	Vertex	Axis of symmetry	Direction of opening	Width
$y - 3 = x^2$	(0,3)	$x = 0$	up	normal
$y = \frac{2}{3}(x + 5)^2$	(-5, 0)	$x = -5$	up	wide
$y + 3 = -4(x - 7)^2$	(7,-3)	$x = 7$	down	narrow
$y - 1 = \frac{-7}{3}(x + 4)^2$	(-4,1)	$x = -4$	down	narrow
$y + 8 = 12x^2$	(0,-8)	$x = 0$	up	narrow